

Managing Hyperinsulinism In Developing Countries: A Real Challenge For Families And Physicians

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Congenital Hyperinsulinism

Most common cause of persistent hypoglycaemia in neonates and infants.

Associated with significant risk of permanent brain damage.

Needs prompt diagnosis and immediate management to prevent neuro-disabilities.





September is Newborn Screening Awareness Month



***What does that
mean for CHI?***



Announcing the sunRIZE Clinical Study in Congenital Hyperinsulinism

It's a new day full of potential for people facing congenital hyperinsulinism (cHI), with the introduction of a new kind of treatment, known as RZ358. That's why this clinical study is called sunRIZE. RZ358 has shown promise in previous studies of cHI patients and is now entering its latest phase of clinical research. sunRIZE is a global, Phase 3 clinical study, which will evaluate the results of RZ358 in people with cHI whose current treatments are not controlling their blood sugar levels well enough. The study is open to people diagnosed with cHI between 3 months to 45 years of age.

[Now Open for Enrollment](#)

Congenital Hyperinsulinism:

**Are you or your child
experiencing
hypoglycemia even
while on medication?**

Please consider the **ACHIEVE**
clinical research study.



Challenges in Developing countries



Delayed presentation

Hyposcreen cost

Free genetic testing

Availability of diazoxide and Octreotide

Cost of BG strips

Lack of feeding assistance

^{18}F DOPA PET scan availability

Trained Pediatric Endocrinologist/ HI consultant

Surgical expertise

Delayed Presentation

In last 2 years **46** cases of HI reported

Average age of presentation 5 months (1day to 5 years)

59 % (n=27) presented in neonatal age

41 % (n=19) presented late (treated as seizures disorders)

- BG were not checked at initial presentation.
- Lack of awareness about CHI among families and HCPs.
- Bringing awareness about CHI in community.**



Diagnosing CHI

Evidence of excessive insulin action at the time of hypoglycemia

1. Suppressed plasma β -hydroxybutyrate (<1.8 mmol/L)
2. Suppressed plasma free fatty acids (<1.7 mmol/L)
3. Inappropriately large glycemic response to glucagon (≥ 30 mg/dL [≥ 1.7 mmol/L])
4. Increased glucose infusion rate required to maintain euglycemia above normal for age
 - >8 mg/kg/min for neonates
 - >3 mg/kg/min for adults

Evidence of excessive insulin secretion/inadequate suppression of insulin secretion at the time of hypoglycemia (these are less definitive than evidence of excessive insulin action)

1. Plasma insulin >1.25 μ U/mL (8.7 pmol/L)
2. C-peptide >0.5 ng/mL (>0.17 nmol/L)

Diagnostic Cost

- Free fatty Acids not available.
- Blood ketones available in few centers.
- Cost of hyposcreen (insulin, C peptide, NH₃, lactate, GH and cortisol) is around a monthly pay of an average worker in our country

(90% cases belong to that category)





Free Genetic Testing



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Dr Samiyya Akhbar
Head of Department
Paediatric Endocrinology and Diabetes
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The Children's Hospital
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Pakistan

31st January 2024

Dear Dr Akhbar,

We are writing to provide our full support to you and your team in your endeavour to develop a national centre of expertise in neonatal diabetes and congenital hyperinsulinism at The Children's Hospital in Lahore.

Neonatal Diabetes and Congenital Hyperinsulinism are monogenic conditions which require a rapid and accurate genetic diagnosis to inform medical management. The University of Exeter is a world-renowned, international centre of excellence for genetic testing and research into these conditions. Our NHS Laboratory provides the highest standard of genetic testing, it is fully accredited by UKAS No. 80920 and participates in multiple external quality assessment schemes including NGAAS/GENEA and BMQ.

To date we have received samples from over 25,000 individuals living with monogenic diabetes and congenital hyperinsulinism for genetic testing in Exeter. These samples have been sent from over 100 countries worldwide. For many of these individuals the cost of DNA sequencing would normally have prohibited genetic testing however through our partnership with the charitable organisation, Congenital Hyperinsulinism International (<https://congenitalhi.org/>) and crowdfunding appeal (<https://www.kickstarter.com/projects/205446934/congenital-hyperinsulinism-international>) we have been able to provide free testing for individuals from lower income countries. This has ensured all individuals can benefit from understanding their genetics regardless of their economic status.

We can confirm that we will continue to provide free genetic testing through these schemes for all individuals diagnosed with neonatal diabetes or congenital hyperinsulinism who are being cared for at The Children's Hospital in Lahore. We also very much look forward to continuing our fruitful collaboration with you and the rest of your team.

Yours sincerely,


Dr Silvia De Franco, PhD
Senior Research Fellow
RD Lawrence Fellow, Diabetes UK


Prof Sarah Hangayn, PhD
Senior Research Fellow, Wellcome Trust
Senior Research Fellow, Wellcome Trust

Open Hyperinsulinism Genes Project: Providing genetic testing to 867 individuals from 61 Countries

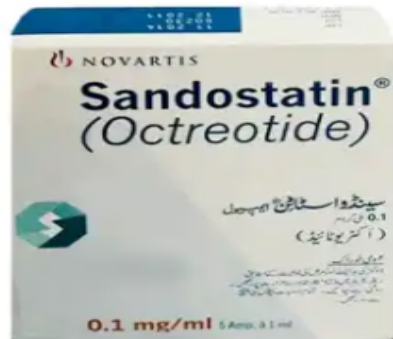


Availability of Medications



Diazoxide

- Not Registered .
- Expensive.
- Often short in market.



Octreotide

- Short acting and LAR available (expensive)
- Lanreotide not available

- ❑ Role of local companies → Proglycem suspension expensive.
- ❑ Collaboration with other organization → in process
- ❑ CHI → Facilitating in making liaison with different companies.

- **Government and policy makers need to be involved**
- **Special grants for this rare condition**



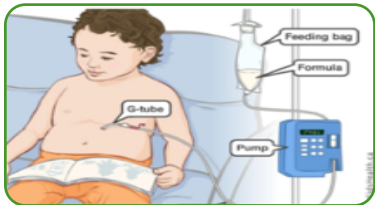
Feeding and nutritional support



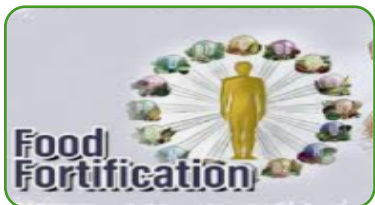
No HI trained dietician



High carb formula are not available



Feeding tube and pumps are expensive.



Feed fortification is a difficult task



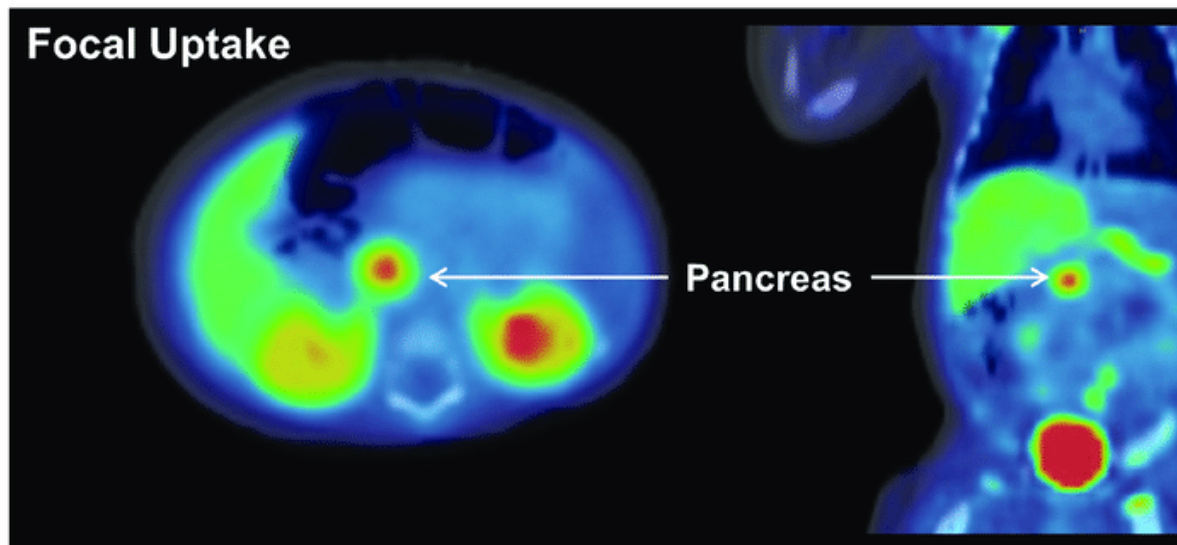
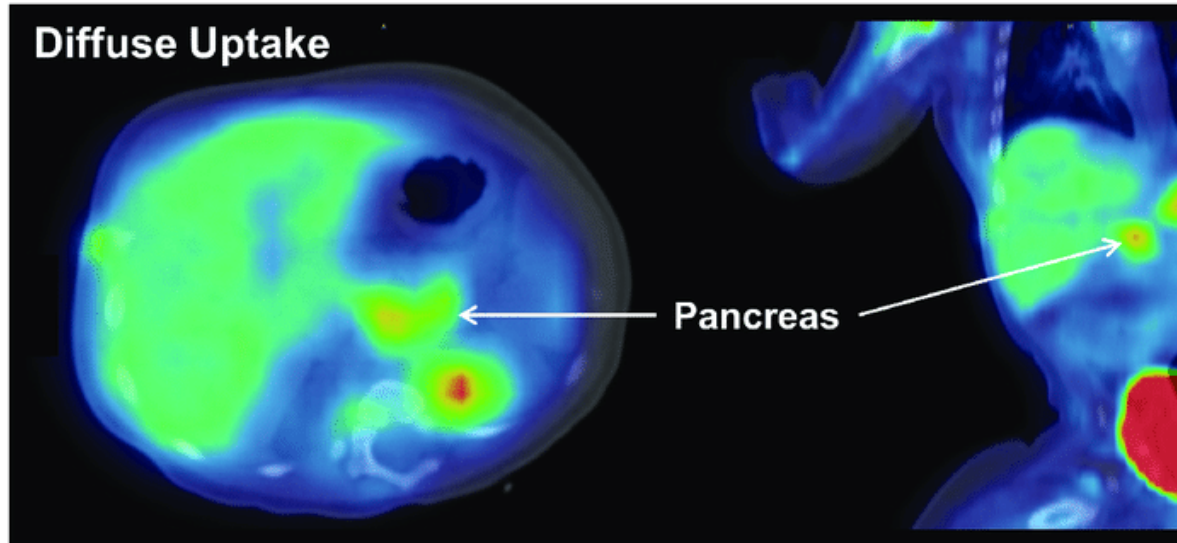
Need for mentor mentee
program for CHI

dietician
Certification for CHI
dietician (virtual).

Support for feeding
tubes, and pumps.

Local guidelines for feed
fortification.

^{18}F DOPA PET SCAN



- Not available in many countries.
- Where available it is expensive
- Need expertise to conduct and interpret these scan
- Problem with dye stabilization .

CHI Trained Consultants/ Surgeon

- Lack of HI trained pediatric Endocrinologist and Surgeons.
- Rare condition and limited exposure of HCPs to manage it.
- **Need for capacity building.**
- **Focal CHI center provide support to other hospital (CHI help line)**



Suggestions

- HI awareness webinars for families and HCPs.
- Guidelines for resource limited countries.
- Efforts for availability of diazoxide.
- Training of a team(Pediatric Endocrinologist, Dietician , Nurse, radiologist and Surgeon) of a focal HI center.
- Capacity building.
- CHI fellowships/ grants for developing countries.



- I am Hooriya I am 4.5-year-old. I was diagnosed with congenital hyperinsulinism since birth. I lived in Peshawar, KPK, Pakistan.
- I am currently managing my sugar with diazoxide, but, when I am unwell my sugar starts going down.
- I love my parents and my doctors who are always there for me at my every low.
- My father is the real fighter. Even in remote area of KPK he is managing my condition. He is the one who initiated the idea of peer support group and has been supporting many families.



I am Alma I am diagnosed with Congenital hyperinsulinism since birth. I am now 8 year of age, studying in grade 1 and enjoying my life to the best.

I am currently on a very low dose of diazoxide and hopeful soon I will no longer need this medicine.

I am thankful to my doctors and especially my parents for not giving up on me and giving me the best care.



- I am Abeera. I belong to a District Layyah south Punjab.

• I was diagnosed with Congenital hyperinsulinism since birth. I did not respond to diazoxide, so I need to take daily shots of injectable insulin to keep my sugar up.

• I am currently 6 years old; I love playing around and want to be a pilot.

• I am thankful to my parents and my doctors at The Children's Hospital Lahore for giving me the best care despite of many obstacles.



- I am Zohan I belong to a District Khushab.

• I was diagnosed with Congenital hyperinsulinism at 8 months of age.

• I am currently 2.6 year of age and love ride on bike with my father

• I am thankful to my parents and my doctors at The Children's Hospital Lahore for giving me the best care.



- I am Hesrain belong to District Bajaur, Khyber Pakhtunkhwa, Pakistan. I am diagnosed with congenital hyperinsulinism since birth.
- I am now four years of age, enjoying my life to the best.
- I am currently on a very low dose of diazoxide and hopefully soon I will no longer need this medicine.
- I am very thankful to Dr. Somnayeef Afzal, consultant/pediatrician CHH in Lahore Children Hospital.



Eshaal Parents

• Our daughter Eshaal Fatima was diagnosed with Congenital Hyperinsulinism at 12 months of age at The Children's Hospital, Lahore.

• We live in Faisalabad which is 2-3-hour drive from Lahore. Initial time of rushing to Lahore (when she was sick) to give her the best care was a nightmare, but we are thankful to The Endocrine team of The Children's Hospital Lahore the way they took care of our kid.

• Now she is doing great on diazoxide. She love playing with dolls. This journey was not possible without continues support of our CHI team at The Children's Hospital, Lahore.

• InshAllah, Eshaal will become a doctor too and take care of other kids like her doctors.





Thank You

